

LIFE HISTORY NOTES ON SOME LEAFHOPPERS
THAT OCCUR ON NEW JERSEY
CRANBERRY BOGS¹

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In connection with other studies, we have made sweep net collections on cranberry bogs almost daily during the growing season for the last two years. The leafhopper population was recorded both as to species and the stage of its life history at the time of collection. A tabulation of these records has given a fairly definite seasonal history of the more common species and the few points not cleared up in this manner were investigated further in cages. A few observations were recorded about the less common species.

For the readers who are unfamiliar with cranberry culture, it may be well to point out some of the unusual features of bog conditions. The cranberry is a low-growing evergreen vine which covers the ground completely under the best of conditions but often grasses and other weeds occur in spots among the vines. The water table is about twelve inches below the surface, assuring moist conditions, and the bogs are completely submerged from December 15th to about May 1st. Of course, no leafhopper can hibernate on the bogs in anything but the egg stage. The ground adjacent to the plantations is almost invariably native growth of trees or shrubs.

Euscelis striatulus Fallen is by far the most common leafhopper on the bogs during the summer. It winters as an egg laid just under the bark of the new wood. The egg is cylindrical with rounded ends and averages 1 mm. in length and 0.25 mm. in diameter. Hatching occurs from May 24 to June 20. The average length of the nymphal instars are first, four days; second, six days; third, fourth and fifth, seven days each. The female adult averaged 4 mm. in length and males a little shorter.

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First adults appeared on June 30 in 1928 and on June 23 in 1929. Nearly all nymphs reached maturity by the fifteenth of July although a few were found until early August. The number of this species starts to diminish by the first of August but the more noticeable falling off is after August 15. A few individuals may be found throughout September and the first week in October. There is but one brood a year. This species feeds on the cranberry vines exclusively while on the bogs and its preference for girdled or otherwise weakened vines is very noticeable. It has not been found to occur on huckleberry or other shrubs around the bogs but appears to live only on the cranberry vines in this locality.

Platymetopius magdalensis Prov. is one of the more common species found on the bogs. It winters as an egg in the leaf of the cranberry. The eggs hatch the last week in May and the adults appear the last week in June, some surviving until the end of July. Another brood starts to hatch the last week in July and the adults are common the first half of September. A few are found throughout October. Two well defined broods a year are therefore indicated. This species feeds on cranberries principally if not exclusively.

Thamnotettix smithi Van Duzee ranks third in numerical importance on cranberry bogs. The adults have been caught as early as May 24th which indicates that this species overwinters as an adult on the banks of the bogs. Nymphs are found early in June and are common early in July but are gone by August 1. Another brood develops during August and September, the nymphs being found up to September 26 and the first adults found September 16. Adults of this species were found late in October when the last sweeping, for the season were made. This species feeds on grasses, chiefly *Carex bullata* Schkuhrs and when caged with only cranberry vines it died within two days. It is not found in pure stands of cranberry vines but occurs in considerable numbers in the small patches of grass scattered through the bogs.

Gypona octolineata var. *striata* Burmeister is generally distributed over cranberry bogs in limited numbers. Its large size makes it particularly noticeable. In 1927 nymphs were found

from June 29 until August 2, adults from July 28 to September 30. In 1928 a nymph was found on May 19, which would indicate that the nymphs found in July 1927 were of a second brood.

Cicadula sexnotata Fallen is another common species on the cranberry bogs. Adults are found on bogs in May and early June indicating overwintering as adults. Adults are present most if not all of the time during the summer. Nymphs were taken in July and August only. The adults are strong fliers, some individuals being caught in the center of a twenty acre bog two days after the water was drawn off. Its food was not definitely determined but we believe it to be a grass feeder.

Thamnotettix nigrofrons Forbes adults have been taken from July 28 to October 11. Numerous nymphs about half grown were found on August 12. They occur on grass spots in cranberry bogs and not on clean vines. When confined with only cranberry vines for food, they died.

Additional species found occasionally in cranberry bogs are: *Empoasca mali* LeBaron; *Thamnotettix melanogaster* Prov.; *Chlorotettix viridius* VanDuzee; *Platymetopius hyalinus* Osborn; *Parabolocratius viridis* Uhler; and *Agallia constricta* VanD.

Most of the species were identified by Mr. Chris Olsen of the American Museum of Natural History. Dr. Herbert Osborn identified *Platymetopius magdalensis* Prov.